

NOTE ON SWAINSON'S GENUS *VOLUTILITHES*.

By R. BULLEN NEWTON, F.G.S.

Read 6th April, 1906.

PLATE XII.

I HAVE been induced to examine the history of Swainson's genus *Volutilithes* in consequence of an enquiry made by Professor W. H. Dall, of Washington, as to the value of *Volutilithes pertusa*, a new species of fossil shell described and figured in the original account of that genus. As a result of my investigations, I find that conchologists have hitherto associated the wrong type with *Volutilithes*; and instead of that being the *Conus spinosus* of Linnæus ("Systema Naturæ," 1758, 10th ed., p. 715) it should be Lamarck's *Voluta muricina*. A discrepancy of this kind has probably arisen through some difficulty in obtaining the work known as "Zoological Illustrations," where Swainson first described the genus in 1831. This author's later and better known book of 1840, called "A Treatise on Malacology," contained a second notice of *Volutilithes*, the form *spinosus* being the first mentioned among a number of established species which were included in the genus, and that which has ever since been regarded as the type. This Linnæan shell, it should be noted, is in no way referred to by Swainson in the original description of *Volutilithes*; in fact, his earlier observations are not even alluded to in this subsequent account of the genus. To further elucidate some of the points connected with the subject, it is advisable to include here a transcription of the full text of Swainson's first notice of the genus, so that students not acquainted with the work in question may be in a position to consider the matter for themselves. In making this extract I have inserted certain references within square brackets for purposes of explanation which are not in the original text:—

"VOLUTILITHES MURICINA. [Pl. XII, Fig. 1.]

[Zoological Illustrations, 1831, ser. II, vol. ii, No. 12, pl. liii, fig. 1.]

Family Volutidæ. Subfamily Volutinæ. *Nob.* (Genus *Voluta*, Lam.)

Generic character.—Spiral whorls regularly and gradually diminishing towards the apex, which is always acute. Plaits of the pillar numerous, always indistinct, generally evanescent, and sometimes wanting. *Nobis.*

Type.—*Voluta musicalis* (?), Lam.

Specific character.—Shell nearly fusiform, the base narrow and smooth; the upper part with longitudinal, subcostated, spinous plaits: inner lip thickened, the last plait on the pillar very thick, and separated from the others, which are slender and nearly obsolete, by a deep groove.

Voluta muricina, Lam., [Hist. Nat. Anim. sans Vert., 1822, 1st ed., vol. vii, p. 350, non "Système," as quoted by Swainson ;] Ency. Méth., pl. 383, fig. 1.

The fourth principal division of the Lamarckian Volutes has hitherto been found only in a fossil state, unless, indeed, the *Voluta Braziliانا* really belongs to this type. The species are very numerous, both in the London Clay and in the *Calcaire grossier* of Grignon. They offer some beautiful types of form, representing the conterminous groups in this family, some of which we may hereafter notice more particularly. The pre-eminent type may probably be the *V. musicalis* of Lamarck ; as yet, we only know this fossil from descriptions and figures, but it has obviously been confounded with several others. Lamarck has given a character so exquisitely finished of *V. muricina* that we have done little more than translate his words. Our specimen appears to be from Grignon, and was furnished to us with the following by Messrs. Stuchbury, 33, Theobald's Road, Bedford Row.

VOLUTILITHES PERTUSA. [Pl. XII, Fig. 2.]

Shell subfusiform, and the base striated ; the upper part with thick, remote, and somewhat nodulous ribs ; transversed near the suture with lines of punctured striæ ; inner lip thickened, plaits on the pillar distinct, the last very strong, the two next smaller, and the upper very slender.

This species is certainly undescribed by Lamarck, nor do we find it in Dr. Fleming's useful compendium of the 'Mineral Conchology.' Our specimen has the grey tinge of the London Clay fossils. Neither of these species are typical, as they represent the recent costated Volutes in the adjoining group."

It is obvious from this account that Swainson was in doubt as to the type of *Volutilithes* from the fact that he queried *Voluta musicalis* of Lamarck, the form selected as the type, and by further stating in the text that "the pre-eminent type may probably be the *V. musicalis* of Lamarck," he being only familiar with that species from figures and descriptions and not from actual specimens.

In the present argument, however, such a point is apparently of little consequence, for on analysing the Lamarckian species, which is a well-known Eocene shell common to the Anglo-Parisian basin, it is found to be a closely related form of the modern *Voluta musica*, the type of *Voluta* as emended by Lamarck, and therefore a member of that genus.

It follows then that Lamarck's *musicalis*, being a true *Voluta*, necessarily invalidates its subsequent use by Swainson as an example of *Volutilithes* ; and while on the subject of *Voluta* it may be mentioned that the genus *Volutolyria* was founded by H. Crosse in 1877 for the reception of *Voluta musica* of Linnæus, and therefore becomes a synonym of *Voluta*, this fact having been explained by M. Cossmann in his "Essais de Paléoconchologie Comparée," 1899, 3rd livraison, pp. 109, 110.

The second species included by Swainson in *Volutilithes* was the *Voluta muricina* of Lamarck, a shell known alike in the Eocene

deposits of both England and France. As far as can be ascertained, this species was never previously occupied for the type of another genus, so that it is clearly available for recognition as the type of *Volutilithes*. It is certain, also, that Swainson was anxious to emphasize the importance of Lamarek's shell, since he headed the whole history of his new genus with "*Volutilithes muricina*."

The late Paul Fischer also used the same Lamarekian shell for the type of *Eopsephæa*, consequently this will now become a synonym of *Volutilithes*. In all Gastropods the details of the protoconch are of essential value for purposes of classification, and particularly among the Volutidæ, where so much variation has been observed by Cossmann, Dall, Crosse, and other authorities. This character is very distinctive in well-preserved examples of *Volutilithes muricina*, especially those obtained from the Parisian Eocene, the protoconch consisting of two smooth mammillated whorls surmounted by a laterally situated, conically pointed nucleus.

Such a change of types as is here suggested unfortunately renders a long list of species, hitherto regarded as *Volutilithes*, without a generic name. Many of these shells are referred to by M. Cossmann in his comprehensive treatise already alluded to ("Essais," etc.), at the head of which stands the Eocene *Voluta* [*Conus*] *spinosa*, Linnæus, Swainson's type of his later *Volutilithes*. To embrace this group of species under the same type it is proposed to replace Swainson's *Volutilithes* of 1840 by the new name of *Volutospina*.

The third shell referred to as belonging to *Volutilithes* is the new species, *pertusa*, which is said to exhibit "the grey tinge of the London Clay fossils." This term "London Clay," as used in Swainson's time, was applied to most of the fossiliferous clays found in the Lower Tertiary rocks of the London and Hampshire Basins, and not as at present restricted for a particular geological horizon. It is therefore not surprising to find, after a careful comparison of the fossil Volutes in the "Frederick Edwards" and other collections at the British Museum, that this *Volutilithes pertusa* is the same shell as was figured by J. Sowerby as *Voluta costata* in the "Mineral Conchology," 1821, vol. iii, pl. ccxc, figs. 2, 4, but which, differing from Solander's shell (represented by fig. 1 of Sowerby's plate) of an earlier date and similar name, was subsequently included by Edwards in his *Voluta humerosa*¹ (Mon. Palæontog. Soc., 1854, p. 171, pl. xxii, fig. 6), a characteristic Upper Eocene species found in the Barton Clay of Hampshire, and which is apparently unknown in the corresponding deposits of the Paris Basin.

¹ It should be noted that the original figures of *V. humerosa* of Edwards do not clearly exhibit the characteristic spiral striations which are so well expressed in the types as well as in all other examples of the species. This ornamentation, as in Swainson's figures of *pertusa*, is mainly confined to the sutural and basal areas of this shell, thus differing from Solander's *V. costata*, where the entire surface of the volutions is transversely lineated. There are, of course, other distinctions to separate these species, but it is not necessary to enlarge upon them at the present time.

Swainson's *V. pertusa* was, however, never referred to by Edwards in his monograph on the Eocene Mollusca, and it is possible that he was not familiar with the "Zoological Illustrations" for 1831; in any case it is quite certain that the older name must be acknowledged, whilst *V. humerosa* must be relegated to synonymy.

Since Swainson's description appeared this shell has only been once systematically noticed in literature, and that was by Deshayes (see Deshayes and Milne Edwards' edition of Lamarck's Hist. Nat. Anim. sans Vert., 1844, vol. x, p. 430), who described it as *Voluta pertusa*, Swainson, and localised it as a "Fossile de Courtagon." No locality is given in Swainson's original text for this species, so that the statement as to "Courtagon" was made without authority and is absolutely incorrect, the shell having been obtained from Barton and not from the French Eocenes. In much more modern times M. Cossmann has recognized that *Voluta humerosa* of Edwards should be associated with Gray's genus *Lyria* (see Cossmann's "Essais de Paléoconchologie Comparée," 1899, 3rd livr., p. 114), although the evidence is greatly in favour of its being a true *Volutilithes*, the protoconch appearing to have the same elements of structure as characterize Lamarck's *muricina*.

The genera and species involved in this discussion may be tabulated as under, the distribution in time being taken from Cossmann's "Essais" before quoted:—

VOLUTA, Linnæus, *emend.* Lamarck.

Linn., Systema Naturæ, 1758, 10th ed., p. 729; Lamarck, Mém. Soc. Hist. Nat. Paris, 1799, p. 70.

Synonym.—*Volutolyria*, H. Crosse, Journ. Conchyliologie, 1877, vol. xxv, p. 99.

Type.—*Voluta musica*, Linnæus. A fossil example = *Voluta musicalis*, Lamarck.

Distribution in time.—Tertiary (Eocene) to Recent.

VOLUTILITHES, Swainson.

Zoological Illustrations, 1831, ser. II, vol. II, pl. liii, fig. 2.

Synonym.—*Eopsephæa*, P. Fischer, Manuel Conchyliologie, 1883, p. 607.

Type.—*Voluta muricina*, Lamarck. Another example is *Volutilithes pertusa*, Swainson.

Distribution in time.—Cretaceous (Turonian) to Tertiary (Eocene).

VOLUTOSPINA, R. Bullen Newton, *nom. mut.*

Synonyms.—*Plejona*, Bolten, *pars*, Museum Boltenianum, 1798, p. 59; *Volutilithes*, Swainson, A Treatise on Malacology, 1840, p. 318, *non* Swainson, 1831.

Type.—*Conus spinosus*, Linnæus.

Distribution in time.—Cretaceous (Turonian) to Recent (= *Philippiana*, Dall).

VOLUTOCORBIS, W. H. Dall.

Trans. Wagner Free Instit. Sci. Philadelphia, 1890, vol. iii, p. 75.

Type.—*Voluta limopsis*, Conrad.

Distribution in time.—Cretaceous (Senonian) to Recent (= *Voluta abyssicola*, Adams & Reeve, and *Volutilithes Gilchristi*, G. B. Sowerby).

Professor Dall described this form (*Volutocorbis*) as a subgenus of Swainson's *Volutilithes* of 1840.

NOTE.—Since the reading of this paper, Professor W. H. Dall has published some notes on the Volutidæ in *The Nautilus* for April, 1906, vol. xix, No. 12, p. 143. Referring to *Volutilithes* of Swainson, he states that the name "was proposed for the shells to which Fischer later gave the name of *Eopsephæa*. The type is *Voluta muricina*, Lam. The shells typified by *Voluta spinosa*, and which are usually called *Volutilithes*, will probably take the name of *Plejona*, Bolten, 1798." The claims of the Boltenian name are, however, much too unsatisfactory for serious consideration, as a glance at its history will readily demonstrate. *Plejona* was founded by Bolten in 1798 (*Museum Boltanium*, p. 59), the first species referred to, and which should be regarded as the type, being *P. fossilis*, a form based upon some figures in Dezallier d'Argenville's "L'Histoire Naturelle éclaircie dans deux de ses parties principales. La Lithologie et la Conchyliologie," 1742, pl. xxxiii, fig. 10, p. 393. Now this so-called figure 10 comprises four separate illustrations of what are termed "Muricites," all of which belong to different shells, and which may be fairly easily recognizable, commencing from the left of the plate, as *Voluta musicalis*, *Volutilithes muricina*, *Volutospina spinosa*, and *Melongena melongena* (this last shell kindly determined for me by Mr. E. A. Smith). It is not possible from a group of shells like this to select one in particular as the type of *Plejona*, and Bolten having failed to specify that which he regarded as such, there is no alternative but to omit this name from the conchological list. I am indebted to Mr. B. B. Woodward, F.L.S., for kindly directing my attention to Professor Dall's interesting communication on this subject.